# DEPARTMENT OF ENVIRONMENTAL QUALITY
## PERMITTING and COMPLIANCE DIVISION
## MONTANA POLLUTANT DISCHARGE ELIMINATION SYSTEM (MPDES)

### Permit Fact Sheet

PERMITTEE: Rio Tinto Minerals

PERMIT NO.: MT 0027821

RECEIVING WATER: Unnamed tributary to Middle Fork Stone Creek

FACILITY INFORMATION

Name: Beaverhead Mine

Location: East ½ of Section 14, Township 7 South, Range 6 West, Madison County Montana; 25 Miles Southwest of Alder.

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FEE INFORMATION

Number of Outfalls: 1 (For Fee Determination Only)

Type of Outfall: 001 Mine Drainage

I. Permit Status

The existing permit was issued to Luzenac America, Inc. (LAI) on August 7, 1997, became effective on September 1, 1997 and expired on June 30, 2001. The permit authorizes discharge of mine water through Outfall 001 to an unnamed tributary to Middle Fork Stone Creek. The existing limits at Outfall 001 included numeric limits for Oil and Grease and pH; and, narrative limits for oil and grease sheen. Monitoring for Outfall 001 is conducted at the end of the pipe discharging to the unnamed tributary to Middle Fork Stone Creek. The existing permit also contains limits for chronic and acute toxicity; however, no Whole Effluent Toxicity (WET) testing nor instream biological monitoring has been required at the facility. Numeric effluent limits at Outfall 001 are summarized in Table 1 (Section II. B.).

The permit also includes numeric instream compliance limits within Middle Fork Stone Creek (MFSC) for Turbidity and Nitrate as Nitrogen ($NO_3^-$ - N). The designated compliance sampling point in the MFSC is called "CRK B", which is located approximately 150 feet downstream from the location the unnamed receiving water discharges to the MFSC. Compliance limits at CRK B include a net increase in turbidity of 5 nephelometirc turbidity units (NTU) and daily maximum $NO_3^-$ - N concentration of 3 mg/L. Monitoring required by the current permit at CRK B includes Turbidity, Total Ammonia, as Nitrogen ($NH_x$ - N), Nitrite as Nitrogen ($NO_2^-$ - N), $NO_3^-$ - N, pH and temperature.

Compliance monitoring at CRK B is accompanied by monitoring requirements at the designated upstream sampling station "CRK A" to assess compliance with the Turbidity standard which was given as the limit in the permit. CRK A is located along MFSC approximately 100 feet upstream of the confluence with the unnamed receiving water. Other parameters monitored at CRK A include $NO_3^-$ - N, $NH_x$ - N and $NO_2^-$ - N.

The existing permit requires monitoring at CRK A when discharge is occurring from Outfall 001 and when enough flow in MFSC exists at the monitoring station to collect a representative sample. Monitoring at CRK B is required when monitoring occurs at CRK A. Instream compliance monitoring data and limits are presented in Table 2 (Section IV.B.).

The permit was modified on August 13, 1997 to change the Oil and Grease monitoring frequency requirements at Outfall 001.

In April and September of 1999 LAI was in violation of the permit for pH. Due to these violations LAI began studying the post reclamation water quality evolution at the site to ascertain why pH excursions were occurring. It was discovered the excursion were due to biological nitrogen uptake/algae growth in the treatment pond and that discharge at pH greater than 9 did not cause a measurable change in pH within MFSC. Accordingly, the permit was modified again on November 30, 1999 to allow for pH excursions from existing permit limit at Outfall 001, as long as it was demonstrated that the pH excursion was a

result of biological processes occurring in the settling/treatment ponds. Since that time any excursions in pH observed at Outfall 001 have been attributed to biological phenomenon occurring in the settling pond(s)/treatment pond(s) via pond influent monitoring.

Luzenac America, Inc. submitted a permit renewal application including Form 1, Form 2C and other supplemental application materials on January 3, 2001. The permit renewal application requested reauthorization of Outfall 001, and a reduction in monitoring schedule and constituent list. The permit application was considered complete pursuant to 75-5-403(1), Montana Code Annotated (MCA) on February 2, 2001. At that time, the existing permit was administratively extended pursuant to ARM 17.30.1313 and remains enforceable until such time an new permit is issued.

On March 6, 2006 Luzenac America Inc. was assimilated by Rio Tinto Minerals, a subsidiary of U. S. Borax, Inc.

Other permits and authorizations currently in affect at the facility include Metal Mine Reclamation Act Operating Permit number 00075.

## II. Facility Information

### A. Facility Description

The Beaverhead Mine facility is a former open-pit and underground talc mining operation located within the mountain valley ecoregion of the Ruby Mountains, approximately 25 miles southwest of Alder. The mine is situated within the east half of Section 14, Township 7 South, Range 6 West in Madison County Montana.

The Beaverhead Mine was historically an active open-pit talc mining and sorting operation utilizing conventional hardrock mining methods. The mine is known to have produced cosmetic grade talc. In 1986 LAI began underground operations at the facility.

During most recent operations water was pumped from the underground to a sump within the pit. Storm water run-off and other mine run-off were diverted to this sump within the pit. From the pit sump wastewater was pumped to the first of four sedimentation/treatment ponds prior to discharge from Outfall 001.

During 1999 LAI initiated closure of the underground workings, and began contouring the waste-rock piles and other reclamation work. LAI ceased pumping from the underground workings and a seep developed at the toe of the middle waste rock dump. Water level monitoring within an adit stand-pipe indicated that the elevation of the seep and the elevation of adit water were similar.

Currently, the facility is undergoing post-closure reclamation stabilization. The current water management system captures mine water seepage likely from the underground workings and run-off and seepage from the reclaimed and partially stabilized “Middle

Dump" waste rock pile. The wastewater is routed to two sedimentation ponds in series, named "Settling Pond #1" and "Settling Pond #2". Settling Pond #1 has a storage capacity of 0.17 acre-feet and overtops into Settling Pond #2, which has a storage capacity of 0.7 acre-feet. Concentrations of suspended materials are reduced via primary treatment within the ponds. Permit renewal application materials (MPDES Permit File) estimate average daily discharge volume from Outfall 001 to be approximately 20,700 gallons per day (gpd), which is equivalent to a continuous discharge of 14.4 gallons per minute (gpm). This estimate includes a 15,600 gpd flow volume that is estimated to be the resulting flows from a 1.3 inch, 2 year 24 hour precipitation event occurring 10 times per year. A schematic flow line diagram is presented as Attachment I. Observed discharge volume and frequency has been less than that estimated by the application.

B. Effluent Characteristics

Discharge from Outfall 001 is intermittent in nature, similar to the unnamed tributary receiving water. Table 1 summarizes monthly self-monitoring effluent data reported by LAI for Outfall 001 during the post reclamation period of record (POR) from January 1, 2000 through April 30, 2006. As indicated by Table 1 discharge has been observed during 12 months of the 64 month POR, no violations have been reported.

Table 1: Effluent Characteristics for the Period January 2000 through April 2006.

| Parameter | Units | Previous Permit Limit | Minimum Value | Maximum Value | Average Value | Number of Samples |
|---|---|---|---|---|---|---|
| Flow, Daily Average | gpm | (3) | <0.5 | 22 | 9.18 | 12 |
| Total Suspended Solids (TSS) | mg/L | (3) | <1 | 25 | <11.2 | 12 |
| pH | s.u. | 6-9(1) | 7.6 | 9.5 | 8.5 | 12 |
| Total Ammonia, as N | mg/L | (3) | <0.1 | 0.3 | <0.12 | 12 |
| Nitrite, as N | mg/L | (3) | <0.05 | 0.95 | <0.16 | 12 |
| Nitrate as N | mg/L | (3) | 0.06 | 8.34 | 5.65 | 12 |
| Oil and Grease | mg/L | 10/15(2) | <1.0 | <1.0 | <1.0 | 11 |

Footnotes:
(1) Effluent pH excursions from permit limit at Outfall 001 are allowed as long as it was demonstrated that the pH excursion was a result of biological treatment processes occurring in the settling/treatment ponds.
(2) Daily maximum/30-day average
(3) No limit in previous permit; monitoring requirement only.

LAI submitted with the permit application analytical results from a mine water sample collected from the underground workings. These results were combined with analytical results from the ephemeral pit lake to aid in determining potential parameters of concern within the effluent; however, they are not considered to be an accurate quantification of current Outfall 001 effluent quality. Analysis included 39 water quality parameters including nutrients, metals and other general water quality parameters. Analytical results are presented and compared to the lowest applicable water quality standard in Attachment

II. As indicated by bolded analytical result text in Attachment II copper and zinc were identified as potential parameters of concern.

III. Proposed Technology-Based Effluent Limits (TBEL)

ARM 17.30.1344 establishes that each MPDES permit must include conditions meeting the requirements stated in 40 CFR 122.44. 40 CFR 122.44(a)(1) states that each NPDES permit shall include conditions meeting the technology-based effluent limitations and standards promulgated under section 301 of the CWA, the new source performance standards promulgated under section 306 of CWA, the effluent limitations determined on a case-by-case basis in accordance with 40 CFR 125.3, or a combination of the three, in accordance with section 402(a)(1) of CWA. 40 CFR 402-699 establish the applicable technology-based effluent limit guidelines applied within permits issued pursuant to section 402 (MPDES permits) of the federal Clean Water Act, for specific industrial categories.

Talc mining and milling facilities fall under standard industrial category (SIC) code 1499, "Miscellaneous Nonmetallic Minerals, Except Fuels". Effluent limitation guidelines (ELG's) have not been promulgated for the talc industrial subcategory. Code of Federal Register (CFR) Title 40, Sub-part AJ (40 CFR 436.360, Talc, Steatite, Soapstone, and Pyrophyllite Subcategory) is designated as "reserved."

IV. Proposed Water-Quality Based Effluent Limits (WQBEL)

A. Scope and Authority

The Montana Water Quality Act (Act) states that a permit may only be issued if the Department finds that the issuance or continuance of the permit will not result in pollution of any state waters 75-5-401(2), MCA. Montana has adopted surface water quality standards (ARM 17.30.601 *et seq.*) to establish the maximum allowable changes in surface water quality and to establish a basis for limiting the discharge of pollutants which affect prescribed beneficial uses of surface water (ARM 17.30.603(1 and 2)). Montana water quality standards at ARM 17.30.637(2) requires that no wastes may be discharged such that the waste either alone or in combination with other wastes will violate or can reasonably be expected to violate any standard. ARM 17.30.1344(1) adopts by reference 40 CFR 122.44. 40 CFR 122.44(d)(1)(i) states that MPDES permits shall include limits on all pollutants which will cause, or have a reasonable potential to cause an excursion of any water quality standard, including narrative standards. The purpose of this section is to provide a basis and rationale for establishing effluent limits, based on Montana water quality standards, that will protect designated uses of the receiving stream.

B. Receiving Water

The Beaverhead Mine facility discharges to an unnamed tributary to the Middle Fork Stone Creek. The water use classification for the unnamed tributary and the Middle Fork Stone Creek is B-1 (ARM 17.30.610(1)(a)).

The unnamed receiving water is described as an intermittent drainage by the United States Geologic Survey (USGS, 1961). Discharge from Outfall 001 constitutes, effectively, the entire flow in the unnamed tributary (see Attachment I). Discharge from Outfall 001, and thus flow within the unnamed tributary, has occurred during all months of the year except August, October, November and December, during the post closure POR. These flows have occurred in response to both precipitation events and groundwater seepage from the toe of the Middle Waste Rock Dump. Accordingly, the 7Q10 flow of the unnamed tributary is assumed to be zero.

The intermittent receiving water drainage flows into MFSC approximately 0.25 mile down gradient from Outfall 001 (Attachment I). A summary of water quality for MFSC at monitoring Sites CRK A and CRK B in Table 2.

Table 2: MFSC Characteristics for the Period January 2000 to April 2006.

| Parameter | Location | Units | Previous Permit Instream Compliance Limit | Minimum Value | Maximum Value | Average Value | Number of Samples |
|---|---|---|---|---|---|---|---|
| pH | CRK B | s.u. | (2) | 7.7 | 8 | 7.9 | 12 |
| Temperature | CRK B | ° F | (2) | 34 | 62 | 45 | 12 |
| Turbidity | CRK A | NTU | CRKB–CRKA ≤ +5 NTU | 0.23 | 7.2 | 2.62 | 12 |
| | CRK B | NTU | | 0.81 | 22/6.31(1) | 3.99/2.36(1) | 12/11(1) |
| $NH_x$-N | CRK A | mg/L | NA | <0.1 | <0.1 | <0.1 | 12 |
| | CRK B | mg/L | (2) | <0.1 | <0.1 | <0.1 | 12 |
| $NO_3^-$-N | CRK A | mg/L | NA | 0.32 | 1.08 | 0.67 | 12 |
| | CRK B | mg/L | 3(3) | 0.56 | 1.31 | 0.87 | 12 |
| $NO_2^-$-N | CRK A | mg/L | NA | <0.05 | <0.05 | <0.05 | 12 |
| | CRK B | mg/L | (2) | <0.05 | 0.05 | <0.05 | 12 |

Footnotes:
(1) Maximum, average values, and number of samples are computed including and not including one analytical result of 22 NTU. Sample was collected when numerous livestock were observed in the creek near site CRK B. For the same sampling event turbidity at Outfall 001 was reported to be 9 NTU. Thus analytical results is not considered representative of the affects of Outfall 001; however it does demonstrate variability in this parameter due to other land use in the area.
(2) No limit in previous permit; monitoring requirement only.
(3) Daily maximum limit.

The confluence of MFSC, Left Fork Stone Creek and run-off from Mine Gulch form Stone Creek. These waters discharge to the Beaverhead River, all of which are headwaters of the Missouri River. MFSC is reach number 0860100 within the Beaverhead drainage basin having Hydrologic Unit Code 10020002.

For purposes of 303(d) determination MFSC is not distinguished as a separate body of water from the mainstem of Stone Creek. Stone Creek is on both the 1996 and 2004 303(d)

list as being an impaired water body in need of a Total Maximum Daily Load (TMDL). The impaired segment consists of the reach starting from approximately 9 miles down stream of the Beaverhead Mine facility, at its confluence with the unnamed tributary in S34, T6S, R7W, and extending 7.3 mile downstream from that point to approximately 0.33 mile below the Highway 41 Bridge. Stone Creek is listed as being partially supportive of aquatic life and cold water fishery beneficial uses and not supportive of primary contact recreation. Probable causes for the impairment listed include dewatering, flow alteration, $NO_3^-$ - N, nutrients, other habitat alterations, riparian degradation and siltation (DEQ. Montana 303(d) List, 2004). The probable sources of impairment listed are agriculture, crop-related sources, grazing related sources, construction, highway/road/bridge construction, highway maintenance and runoff.

On August 28, 1997, EPA Region VIII administrator approved, pursuant to section 303(d)(1) of the federal Clean Water Act, a point source TMDL associated with permit number MT0027821 including nitrate, oil and grease and turbidity within MFSC (MPDES Permit File). The TMDL is discussed in the next section (IV.C.) in the context of applicable water quality standards within the MFSC.

C. Applicable Water Quality Standards

Discharges to surface waters classified B-1 are subject to the specific water quality standards of ARM 17.30.623 (June 30, 2003); as well as; the general provision of ARM 17.30.635 through 637, 640, 641, 645 and 646, unless they conflict with ARM 17.30.623 (ARM 17.30.603(3)). ARM 17.30.623 ((2) (b) and (h)) incorporates by reference Department Circular DEQ-7 "Montana Numeric Water Quality Standards" (2006).

Waters classified B-1 are to be maintained suitable for drinking, culinary, and food processing purposes after conventional treatment; bathing, swimming, and recreation; growth and propagation of salmonid fishes and associated aquatic life, waterfowl, and furbearers; and agricultural and industrial water supply (ARM 17.30.623). Discharges that will limit any of these beneficial uses are not allowed pursuant to ARM 17.30.603(1). The most restrictive water quality standards for state water affected by the discharge for specific potential parameters of concern associated with the facility are described below.

*Nitrogen*
Nitrogen is a plant growth nutrient and is of concern because the addition of nutrients from the mine may have an impact on the aquatic habitat and populations in the receiving water. ARM 17.30.637(1) states that State surface waters must be free from substances attributable to municipal, industrial, agricultural practices or other discharges that will create concentrations or combinations of materials which are toxic or harmful to human, animal, plant or aquatic life (ARM 17.30.637(1)(d)); and create conditions which produce undesirable aquatic life (ARM 17.30.637(1)(e)).

Pursuant to 75-5-703, MCA and section 303(d)(1) of the federal Clean Water Act (33 U.S.C. 1251 *et. seq.*), a point source TMDL for MFSC was approved on August 28, 1997.

The TMDL establishes 3 mg $NO_3^-$-N /L maximum instream concentration for MFSC as recommended by the federal Bureau of Land Management as being protective of aquatic life and other beneficial uses.

Ammonia nitrogen can act as a nutrient and is listed as a toxic substance in DEQ-7 (February, 2006). ARM 17.30.623(2)(h) states that concentrations of carcinogenic, bioconcentrating, toxic or harmful parameters which would remain in the water after conventional treatment may not exceed the applicable standards set forth in department Circular DEQ-7. The most stringent applicable ammonia standard in DEQ-7 is the chronic criterion when early life stage fish are present, which is estimated to be 2.1 mg/L based on maximum pH and temperature DMR data reported for monitoring station CRK B (Attachment II).

*Oil and Grease*
ARM 17.30.637(1)(b) states that discharge shall not create a visible oil film or globules of grease, or be present in concentrations at or in excess of 10 mg/L.

*pH*
ARM 17.30.623(2)(c) states that the induced variation of hydrogen ion concentration (pH) within the range of 6.5 - 8.5 must be less than 0.5 ph unit. Natural pH outside this range must be maintained without change. Natural pH above 7.0 must be maintained above 7.0.

*Copper and Zinc*
Based on analytical results from mine water at the facility (Attachment II), copper and zinc have been identified as a potential parameters of concern within the effluent. ARM 17.30.623(2)(h) states that concentrations of carcinogenic, bioconcentrating, toxic or harmful parameters which would remain in the water after conventional treatment may not exceed the applicable standards set forth in department Circular DEQ-7. The lowest applicable standard listed in DEQ – 7 (February, 2006) is the chronic aquatic life standard, which is calculated based on the hardness of the receiving water. No hardness data was available for the receiving water. Therefore, based on an average of the hardness data from water quality analysis of underground mine water and the pit lake (Attachment II), the lowest applicable copper and zinc standards are estimated to be 0.005 mg/L and 0.065 mg/L, respectively.

*Total Suspended Solids and Settleable Solids*
ARM 17.30 .623(2)(f) and ARM 17.30.637(1)(a) contains the lowest applicable total suspended solids standards for the unnamed tributary receiving water. ARM 17.30.623(2)(f) states no increases are allowed above naturally occurring concentrations of sediment or suspended sediment, settleable solids, oils, or floating solids, which will or are likely to create a nuisance or render the water harmful, detrimental, or injurious to public health, recreation, safety, welfare, livestock, wild animals, birds, fish or other wildlife. ARM 17.30.637(1)(a) states that state waters must be free from substances attributable to industrial practices or other discharges that will settle to form objectionable sludge deposits or emulsions beneath the surface of the water or upon adjoining shorelines.

*Turbidity*
ARM 17.30.623(2)(d) states that the discharge from the mine facility shall not cause an increase in turbidity in the receiving water in excess of 5 NTU.

ARM 17.30.635(4) requires that the design condition for disposal systems must be based on the 7-day average flow of the receiving water which is expected to occur on average once in 10-years (7Q10). More restrictive requirements may be necessary due to specific mixing zone requirements.

D. Mixing Zone

A mixing zone is an area where the effluent mixes with the receiving water and certain water quality standards may be exceeded (ARM 17.30.502(6)). The Department must determine the applicability of currently granted mixing zones (ARM 17.30.505(1)). Mixing zones allowed under a permit issued prior to April 29, 1993 will remain in effect unless there is evidence that previously allowed mixing zones will impair existing or anticipated uses (ARM 17.30.505(1)(c)).

Although certain standards may be exceeded in the mixing zone, an effluent in its mixing zone may not block passage of aquatic organisms nor may it cause acutely toxic conditions (ARM 17.30.602(16)). No mixing zone will be granted that will impair beneficial uses (ARM 17.30.506(1)). Acute standards may not be exceeded in any part of the mixing zone (ARM 17.30.507(1)(b)). Aquatic life chronic, aquatic life acute and human health standards may not be exceeded outside of the mixing zone [ARM 17.30.507(1)(a)].

The 7Q10 of the unnamed tributary to MFSC is zero, and at times discharge from the Outfall 001 is the only flow in the intermittent drainage. Therefore, no mixing zone shall be issued and effluent limits for Outfall 001 apply at the end of the discharge pipe outlet from "Settling Pond #2" dam.

E. Basis for Water Quality-Based Effluent Limits

Potential parameters of concern (PPOC) associated with the reclaimed mine wastewater have been identified through long term monitoring and synoptic extended parameter sampling and analysis (Attachment II). The PPOC for this facility include suspended solids, turbidity, oil & grease, pH, ammonia, nitrate, copper and zinc**.**

Effluent limits are required for all pollutants which demonstrate a reasonable potential to exceed numeric or narrative standards. Analysis using *EPA Technical Support Document for Water Quality based Toxics Control (TSD) (EPA/505/2-90-001)* methods and qualitative examination of the data with respect to narrative standards has been conducted by the Department to determine reasonable potential for PPOC. Based on this analysis the Department has determined that there is reasonable potential for the discharge to cause an excursion from the maximum pH standard within the unnamed intermittent drainage

receiving water. Not enough data was available to determine reasonable potential for copper and zinc. Copper, zinc and hardness monitoring will be required so reasonable potential may be evaluated in subsequent permit renewals.

The Department has determined based on monitoring data at site CRK B that the mine's current Long Term Average discharge\Waste Load Allocation (WLA) for nitrate, combined with other Load Allocations from the unnamed tributary, does not have a reasonable potential to exceed the MFSC TMDL of 3 mg $NO_3^-$-N/L. Therefore, a more stringent WLA for $NO_3^-$-N is not necessary at this time. However, the department has determined based on the CRK A and CRK B DMR data that the discharge has a reasonable potential to cause an excursion in MFSC from the relative increase turbidity standard. Numeric instream compliance limits for turbidity will be carried forward and suspended solids water quality based effluent limits have been developed for Outfall 001.

F. Proposed Water Quality-Based Effluent Limits

Based on the reasonable potential analysis the Department proposes to carry forward the MFSC instream Turbidity compliance limits from the previous permit cycle. Therefore, discharge from Outfall 001 shall not cause a net increase within MFSC in excess of 5 NTU. Additionally, the following effluent limits apply:

- Discharge from Outfall 001 shall not cause increases within the unnamed tributary above naturally occurring concentrations of sediment or suspended sediment, settleable solids or floating solids, which will or are likely to create a nuisance or render the water harmful, detrimental, or injurious to public health, recreation, safety, welfare, livestock, wild animals, birds, fish or other wildlife.
- The discharge from Outfall 001 shall not contain materials or pollutants that will settle to form objectionable sludge deposits or emulsions beneath the surface of the water or upon adjoining shorelines of the unnamed tributary to MFSC.

Based on the reasonable potential analysis the Department proposes a limit for pH on Outfall 001 based on the standard for B1 State water, and previous permit conditions. The previous permit was modified in November 1999 to include a provision, such that the pH of effluent from Outfall 001 was allowed outside the range of the permit limits if the variation was due to natural biological processes occurring within the treatment pond(s). The Department proposes that this provision be carried forward from the previous permit, because it is believed that nutrients are a greater threat to the receiving waters than pH in excess of the standard. However, the Department proposes numeric limits for pH at Outfall 001 in accordance with the standard. Thus, it is proposed that effluent shall remain between 7 and 8.5 s.u. If discharge from Outfall 001 is greater than 8.5, the permittee will be considered in compliance with the permit if it is demonstrated with field data that settling pond influent pH was between 6.5 and 8.5 at the time of effluent measurement.

V. Final Limitations

A. Outfall 001 Effluent Limits

Table 5. Final Effluent Limitations – Outfall 001

| Parameter | Units | Average Monthly Limit | Maximum Daily Limit |
|---|---|---|---|
| pH | s.u. | NA | 7.0-8.5 |

- Discharge from Outfall 001 shall not cause increases within the unnamed tributary above naturally occurring concentrations of sediment or suspended sediment, settleable solids or floating solids, which will or are likely to create a nuisance or render the water harmful, detrimental, or injurious to public health, recreation, safety, welfare, livestock, wild animals, birds, fish or other wildlife.
- The discharge from Outfall 001 shall not contain materials or pollutants that will settle to form objectionable sludge deposits or emulsions beneath the surface of the water or upon adjoining shorelines of the unnamed tributary to MFSC.

B. MFSC Compliance Limits

Table 6. Final Compliance Limitations at CRK B

| Parameter | Units | Maximum Daily Limit [1] |
|---|---|---|
| Turbidity | NTU | Net Increase 5 NTU |

Footnotes:
1. See Definition section at end of permit for explanation of terms.

VI. Monitoring Requirements

The permittee shall be required to monitor for the PPOC listed below, at the frequency, location and with type of sample specified. Total Kjeldahl Nitrogen monitoring has been added due to demonstrated occurrences of biologic activity within the treatment ponds that likely converts $NO_3^-$ - N to organic forms of nitrogen.

Table 7. Facility Monitoring Requirements.

| Parameter | Units | Sample Location | Sample Frequency | Sample Type[1] |
|---|---|---|---|---|
| Flow | gpm | Outfall 001 | Quarterly | Instantaneous |
| | gpm | CRK A | Quarterly | Instantaneous |
| | gpm | CRK B | Quarterly | Instantaneous |
| pH | s.u. | Outfall 001 | Quarterly | Instantaneous |
| | s.u. | Pond #1 Influent[2] | Quarterly | Instantaneous |
| | s.u. | CRK A | Quarterly | Instantaneous |
| | s.u. | CRK B | Quarterly | Instantaneous |
| $NO_3^-$-N | mg/L | Outfall 001 | Quarterly | Grab |
| | mg/L | CRK A | Quarterly | Grab |
| | mg/L | CRK B | Quarterly | Grab |
| Total Kjeldahl Nitrogen | mg/L | Outfall 001 | Quarterly | Grab |
| | mg/L | CRK A | Quarterly | Grab |
| | mg/L | CRK B | Quarterly | Grab |
| Total Suspended Solids | mg/L | Outfall 001 | Quarterly | Grab |
| Turbidity | NTU | CRK A | Quarterly | Grab |
| | NTU | CRK B | Quarterly | Grab |
| Copper, Total Recoverable | mg/L | Outfall 001 | Quarterly | Grab |
| | mg/L | CRK A | Quarterly | Grab |
| Zinc, Total Recoverable | mg/L | Outfall 001 | Quarterly | Grab |
| | mg/L | CRK A | Quarterly | Grab |
| Hardness as $CaCO_3$ | mg/L | Outfall 001 | Quarterly | Grab |
| | mg/L | CRK B | Quarterly | Grab |

Footnotes:
1. See Definition section at end of permit for explanation of terms.
2. Pond 1# influent monitoring is only required when Outfall 001 effluent pH is in above or below the permit effluent limit range.

VII. Other Information

On September 21, 2000, a U.S. District Judge issued an order stating that until all necessary total maximum daily loads (TMDLs) under Section 303(d) of the Clean Water Act are established for a particular water quality limited segment (WQLS), the State is not to issue any new permits or increases under the MPDES program. The order was issued in the lawsuit Friends of the Wild Swan v. U.S. EPA, et al. (CV 97-35-M-DWM), District of Montana and Missoula Division.

The DEQ finds that renewal of this permit does not conflict with Judge Molloy's Order (CV 97-35-M-DVM) because TMDLs associated with the discharge have been established.

## VIII. Information Sources

ARM Title 17, Chapter 30, Subchapter 5 - Mixing Zones in Surface and Ground Water**.** November 2004.

ARM Title 17, Chapter 30, Subchapter 6 - Surface Water Quality Standards. June 30, 2004.

ARM Title 17, Chapter 30, Subchapter 7 - Nondegradation of Water Quality. June 30, 2004.

ARM Title 17, Chapter 30, Subchapter 13 - Montana Pollutant Discharge Elimination System (MPDES) Standards. March 31, 2003.

40 CFR, Parts 122, 133, 136, July 1, 2004.

DEQ. Circular WQB-7, Montana Numeric Water Quality Standards. February 2006.
DEQ. Montana List of Water bodies in Need of Total Maximum Daily Load Development. 1996.

DEQ. Montana 303(d) List. A Compilation of Impaired and Threatened Water bodies in Need of Water Quality Restoration. Part A. Water Quality Assessment Results. November 24, 2004.

EPA. Office of Water, U.S. EPA NPDES Permit Writers' Manual, EPA-833-B-96-003. December 1996.

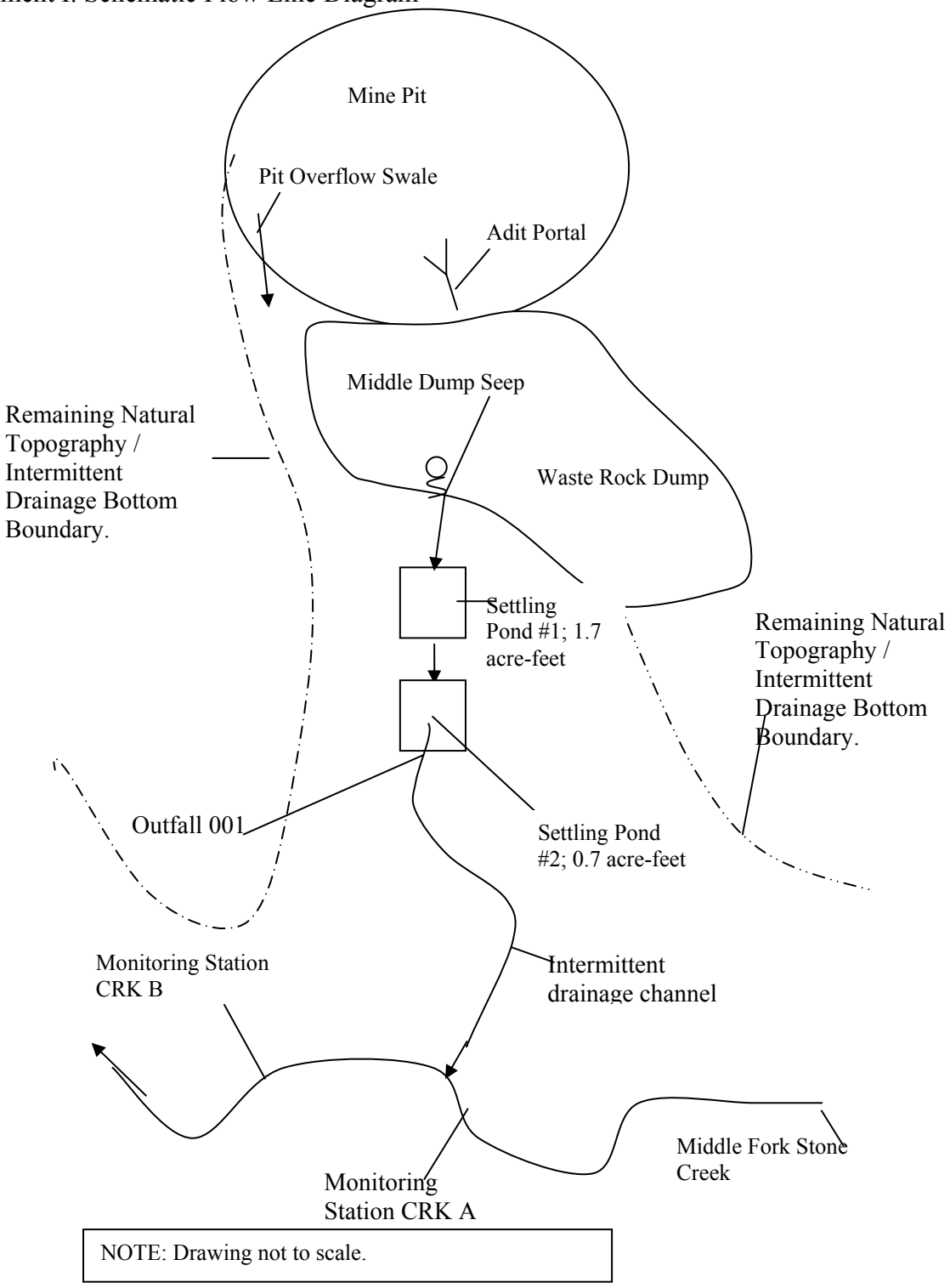
EPA, 1991. *Technical Support Document for Water Quality-Based Toxics Control* (EPA/505/2-90-001), EPA, Office of Water Enforcement and Permits, March 1991.

MPDES Permit # MT0027821 File.

USGS, 1961. *Mine Gulch Mont.*, Mine Gulch 7.5 Minute Topographic Quadrangle Map, Madison County, Montana, United States Geologic Survey, Denver Colorado.

Prepared by: Paul Skubinna
Date: August 2006

Attachment I. Schematic Flow Line Diagram



Attachment II. Extended Parameter List Analytical Results.

| Parameter (mg/L unless noted) | Analytical Result | | Lowest Applicable Standard | |
|---|---|---|---|---|
| | Pit Lake July 2005 | Underground September 1999 | mg/L (unless noted) | Rationale |
| Alkalinity, Total as $CaCO_3$ | | 66 | --- | --- |
| Aluminum, Total Recoverable | 0.3 | 0.2 | 0.75 | AALS |
| Animtony, Total Recoverable | <0.05 | <0.003 | 0.0056 | HHS |
| Arsenic, Total Recoverable | | <0.003 | 0.01 | HHS |
| Barium | <0.1 | 0.022 | 2 | HHS |
| Beryllium, Total Recoverable | <0.001 | <0.001 | 0.004 | HHS |
| Boron, Total Recoverable | <0.1 | <0.1 | --- | --- |
| Cadmium, Total Recoverable | <0.001 | <0.0005 | 0.0002 | CALS |
| Calcium | 14 | 10 | --- | --- |
| Chloride | | 10 | --- | --- |
| Chromium, Total Recoverable | <0.01 | 0.009 | 0.001 | HHS |
| Specific Conductance @ 25°C (umhos/cm) | 127 | 329 | --- | --- |
| Copper, Total Recoverable | <0.01 | **0.007** | 0.0050 | CALS |
| Fluoride | | 0.22 | 4 | HHS |
| Hardness, as $CaCO_3$ | 64 | 33 | --- | --- |
| Iron, Total Recoverable | 0.24 | 0.2 | 1.0 | CALS |
| Lead, Total Recoverable | <0.01 | <0.003 | 0.0013 | CALS |
| Lithium, Total Recoverable | | <0.1 | --- | --- |
| Magnesium | 7 | 2 | --- | --- |
| Manganese | <0.01 | <0.005 | 0.05* | HHS* |
| Mercury, Total Recoverable | | <0.0006 | 0.00005 | HHS |
| Molybdenum, Total Recoverable | 0.025 | 0.006 | --- | --- |
| Nickel, Total Recoverable | <0.01 | <0.02 | 0.028 | CALS |
| Nitrogen, Ammonia as N | | 0.18 | 2.12 | CCC |
| Nitrogen, Total Kjeldahl as N | | 2.1 | --- | --- |
| Nitrogen, Nitrate + Nitrite as N | 0.07 | 5.15 | Narrative | GP |
| Oil and Grease | | <1 | 10 | GP |
| pH (s.u.) | 8.5 | 9.6 | Instream $\Delta \leq \pm$ 0.5 s.u. | B1 |
| Phosphorus, Orthophosphate as P | <0.1 | 0.0018 | Narrative | GP |
| Potassium | 1 | 33 | --- | --- |
| Selenium, Total Recoverable | | <0.003 | 0.005 | CALS |
| Silver, Total Recoverable | <0.005 | <0.003 | 0.0012 | AALS |
| Sodium | 3 | 31 | --- | --- |
| Solids, Total Dissolved @ 180°C | | 223 | --- | --- |
| Solids, Total Suspended | | 10 | --- | --- |
| Sulfate | | 47 | --- | --- |
| Thallium, Total Recoverable | <0.1 | <0.002 | 0.00024 | HHS |
| Turbidity (NTU) | | 7.8 | Instream $\Delta \leq$ +5 NTU | B1 |
| Zinc, Total Recoverable | <0.01 | **0.2** | 0.065 | CALS |

AALS = Acute Aquatic Life Standard
CALS = Chronic Aquaitic Life Standard
HHS = Human Health Standard
SMCL = Secondary Maximum Contaminant Level
$\leq$ = Less than or equal to
GP = General Prohibition (ARM 17.30.637)
B1 = Class B1 Surface Water Standard (ARM 17.30.623)
$\pm$ = Plus or minus
* = DEQ - 7 recommended level for aesthetic value of water
$\Delta$ = Change
CCC = Estimate of the total ammonia chronic criterion when fish early life stages are present using an estimate maximum instream temperature 62°F and pH of 8.0 (see Table 2.).